Valuing Research and Development in the U.S. Department of Energy: A Motivation for Valuing Externalities[1]

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Abstract

Studies on valuing externalities associated with electric power generation have been motivated by desires to account for external costs in energy planning and decision making. More recently, government research and development (R&D) programs, specifically some of the ones in the U.S. Department of Energy (DOE), are being challenged to estimate the benefits of their R&D. Part of the rationale for programs in the Office of Fossil Fuel (FE) and the Office of Energy Efficiency and Renewable Energy (EERE) in DOE is that the new technologies they develop could be commercialized, and improve energy efficiency and reduce net emissions of pollutants.

FE and EERE are using a recent National Research Council (NRC) study,[3] as well as insights gained from a follow-up workshop,[4] as a starting point for improving the methods they use to estimate their benefits. The NRC study developed a two-dimensional framework that categorizes benefits as being either economic, environmental, or energy-security related in nature (one dimension of the framework), and that is either realized, an option that could provide realized benefits in the future, or knowledge that has value even though it has no direct commercial benefit (the second dimension):

	Realized	Option	Knowledge
Economic			
Environmental			
Energy Security			

This approach for defining the benefits of R&D means that part of the value of DOE's R&D could be assessed by valuing the reductions in external costs and the increases in external benefits that are thought to result, at least in part, from FE and EERE's programs.

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[3] National Research Council's Committee on Benefits of DOE R&D on Energy Efficiency and Fossil Energy, *Energy Research at DOE: Was It Worth It?* Washington, DC: National Academy Press, 2001.

[4] Conference on "Estimating the Benefits of Government-Sponsored Energy R&D," March 4-5, 2002, Crystal City, VA. Conference web site: www.esd.ornl.gov/benefits_conference.